New Design of a Low Cost Small Engine Dynamometer for Engine Testing

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ABSTRACT

This paper discusses the design and development of a low cost small engine dynamometer for engine testing to measure engine performance i.e. power, torque and specific fuel consumption. The data and result were achieved by using a small hydraulic engine dynamometer with specific considerations and standard followed in order to have good engine dynamometer. Small engine was used by coupling it with the hydraulic pump that come with the control valve and pressure gauge. Control valve was set to build back pressure inside the pumping area. When the engine starts, the pressure gauge will give a reading which can be used to calculate the engine torque. By using the engine torque, engine power can be obtained by multiplying the angular speed with engine torque. Specific fuel consumption can be defined, by dividing the brake engine power with the fuel rate. From the experiment data, the brake power of the single cylinder engine showed that it is almost similar to the specification given by the manufacturer. The low cost hydraulic engine dynamometer, which is less than RM 15,000 can be used to measure an engine performance. The engine power, torque, engine speed and air fuel ratio data can be achieved from our developed engine dynamometer.

KEYWORDS: Back Pressure, Engine Power, Engine Torque, Hydraulic Engine Dynamometer, Specific Fuel Consumption

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